FN1 In the case of equipment approved prior to May 26, 1965, the artificial antenna may be 10 ohms resistance and 75 picofarads capacitance.

(c) (2)

(2) The noise power present in the output of the receiver when the receiver is adjusted for A2A or H2A emission on 500 kHz and 8364 kHz must be determined with an unmodulated input signal of the indicated strength.

(d)

(d) The power supply must meet the following requirements:

(d) (1)

(1) The source of power must be a manually operated electric generator capable of energizing the survival craft radio installation. The mechanical power applied to the crank handle(s) or the propelling lever(s) of the generator driving mechanism must not exceed a maximum of 0.15 horsepower for any operation of the survival craft radio installation at any temperature of the generator and its associated driving mechanism between minus 30 degrees and plus 50 degrees Celsius. Under these conditions the speed of rotation of the crank handle(s) must not be greater than 70 revolutions per minute nor must the cycles of operation of the propelling lever(s) be greater than 70 cycles per minute. The voltages applied to the radio installation must not vary from their normal values more than 20 percent at any generator speed in excess of the normal operating speed which can be manually developed.

(e)

(e) The antenna system must consist of a single wire antenna with a collapsible mast or a collapsible rod antenna conforming to the following requirements:

(e) (1)

(1) The single wire antenna must be at least 12 meters (40 feet) of at least No. 10 AWG insulated extra-flexible stranded copper and include a means for fastening the wire to the antenna supports, and means for making electrical connection to the transmitter;

(e) (2)

(2) Each totally enclosed lifeboat must be provided with a collapsible rod antenna which operates in either a freestanding position or supported only by a grommet in the canopy of the lifeboat. The antenna must be capable of being erected from within of the enclosure. Antennas for use in totally enclosed lifeboats must be certificated.

(f)

(f) The grounding system must consist of either a conducting wire or plate to provide an efficient ground for the portable survival craft equipment. The conducting wire must consist of a length of not less than 6 meters (20 feet) of No. 10 AWG bare stranded copper or equivalent copper braid weighted at one end for immersion in the sea. The ground plate must consist of a bare plate or strips of corrosion resistant metal having a total area of at least .6 square meters (6.5 square feet) and must be located on the hull of the lifeboat below the waterline. The electrical connection to the grounding conductor or to the ground plate must be made from inside the lifeboat.

s 80.267 Requirements for survival craft nonportable radio equipment.

(a) (1)

(a)(1) The radio transmitter must meet the following requirements:

Operati-	Frequency tolerance		Type of	Modul-	Modul-	Aver- age	Arti-
	Parts	HZ					

ng frequency (kHz)	[FN1] in 10 super6	[FN2]	emission	ation percentages (average of modulation percentage of positive and negative peaks)	ation frequency	power output into specified artificial antenna	ficial antenna
500	5,000	20	A2A and A2B or H2A and H2B.	Not less than 70.	Not less than 450 nor greater than 1350 Hertz.	Not less than 30 watts.	10 ohms resistance and 100 picofarads capacitance.
8364	200	50	A2A or H2A Ides.	...do	...do	Not less than 40 watts.	40 ohms resistance.

FN1 For equipment approved before November 30, 1977.
FN2 For equipment approved after November 29, 1977.

(a) (2)
(2) The transmitter must have an antenna current meter.
(b)
(b) Survival craft non-portable receivers must meet the following requirements:
(b) (1)
(1) The audio output must be one milliwatt at a signal to noise power ratio of at least 10 to 1, when the receiver is supplied through the following artificial antennas with the respective radio frequency signals:

Operating frequency, (kHz)	Signal strength (microvolts)	Modulation factor	Modulation (Hz)	Artificial antenna
500	200	0.3	400	15 ohms resistance and 100 picofarads capacitance.
8364	1,000	0.3	400	40 ohms resistance.

(b) (2)
(2) ~~When the receiver is adjusted for A2A or H2A emission on 500 kHz and 8364 kHz the noise power present in the output of the receiver must be determined with an unmodulated input signal of the indicated strength~~;
(b) (3)
(~~3) The audio output of the receiver must be capable of at least 8 dB above one milliwatt at the rated loan impedance~~.

s 80.269 Technical requirements for radiotelephone distress frequency watch receiver.

(a)
(a) The radiotelephone distress frequency watch receiver is comprised of a receiver, a loudspeaker and a radiotelephone auto alarm device.
(b)
(b) The radiotelephone distress frequency watch receiver must meet the following requirements:
(b) (1)
(1) The receiver must be capable of being switched to 2182 kHz and of receiving signals of at least A2A, A2B, ~~H2A and H2B~~ emissions;
(b) (2)
(2) The receiver sensitivity must provide a SINAD of 20 dB at the audio output when a 30 microvolt signal with A2A, A2B, ~~H2A, or H2B~~ emission modulated 30% at 400 Hz is applied to the receiver RF terminals;
(b) (3)
(3) The audio output of the receiver must be at least 50 milliwatts at the rated load impedance;
(b) (4)
(4) The receiver must be provided with an auto alarm device which mutes the receiver (silences the loudspeaker) unless the radiotelephone alarm signal or the signal preceding a vital navigational warning is received. When the auto alarm is activated the receiver audio output level must be louder than the output level of the received speech signal. Additionally, the receiver must meet the following requirements:
(b) (4) (i)
(i) When the receiver is muted its audio output power must be less than 1 milliwatt;
(b) (4) (ii)
(ii) If tone filters are used to process the 1300 Hz and 2200 Hz tones the tolerance of their center frequency must be +/-1.5 percent of the alerting frequency. The response must be flat within 6 dB to +/-3% of the center frequency of the filters; and
(b) (4) (iii)
(iii) The receiver must not be unmuted by atmospherics or by strong signals other than the radiotelephone alarm and the vital navigational warning signal.
(b) (5)
(5) The receiver must be unmuted within 4 to 6 seconds when a double sideband alarm signal modulated at 70% is applied at its input terminals at a level which produces a SINAD of 10 dB under the following conditions:
(b) (5) (i)
(i) For radiotelephone alarm the signal must be modulated sequentially by a 1300 +/-20 Hz tone and a 2200 +/-35 Hz tone. The duration of each tone must be 250 +/-50 milliseconds and the period between each tone must not exceed 50 milliseconds; and
(b) (5) (ii)

(ii) For navigational warning the signal must be modulated by a 2200 +/-35 Hz tone and the modulated carrier must be turned "on" for 250 +/-50 milliseconds and then "off" for 250 +/-50 milliseconds.

(b) (6)

(6) The receiver must not be unmuted when a double sideband signal of 70 dB above the receiver measured sensitivity, modulated at 70% by a 2200 +/-35 Hz tone with the following durations is applied at its input terminals:

(b) (6) (i)

(i) "On" periods of less than 175 milliseconds or more than 325 milliseconds followed by "off " periods of any duration; and

(b) (6) (ii)

(ii) "Off" periods of less than 175 milliseconds or more then 425 milliseconds followed by "on" periods of any duration.

(b) (7)

(7) The controls listed below must be provided on the exterior of the equipment:

(b) (7) (i)

(i) On/off switch with a visual indication that the device is on;

(b) (7) (ii)

(ii) Volume control to adjust the audio output;

(b) (7) (iii)

(iii) Control for dimming any light on the equipment;

(b) (7) (iv)

(iv) Control for switching the auto alarm in and out of operation; and

(b) (7) (v)

(v) Control to manually reset the auto alarm to muted condition.

(b) (8)

(8) The receiver must operate within specifications throughout the temperature range 0-50 degrees Celsius at relative humidities as high as 95%.

(b) (9)

(9) The receiver must be capable of operating when subjected to vibrations having a frequency between 20 and 30 Hertz and an amplitude of 0.76 mm (0.03 inch) in a direction at an angle of 30 to 45 degrees with the base of the auto alarm.

s 80.271 Technical requirements for portable survival craft radiotelephone transceivers.

(a)

(a) Portable survival craft radiotelephone transceivers must comply with the following:

(a) (1)

(1) The transceivers must receive and transmit either on 457.525 MHz or on 156.800 MHz;

(a) (2)

(2) The receiver must comply with the requirements in Part 15, Subpart C of this chapter and must have a sensitivity of not more than 2 microvolts. The sensitivity requirement must be met using the receiver sensitivity measurement procedure specified in the Radio Technical Commission for Marine Services (RTCM) Special Committee No. 66 Report MMS-R2;

(a) (3)

(3) The effective radiated power of the transmitter must be at least 0.1 watt;

(a) (4)
(4) The transceivers must be battery powered and operate for at least four hours with a transmit to receive ratio of 1:9 with no significant adverse effect upon the performance of the device;
(a) (5)
(5) The transceivers must have a permanently attached waterproof label with the statement "Complies with the FCC requirements for survival craft two-way radiotelephone equipment"; and
(a) (6)
(6) The antenna must be permanently attached to the device or its removal must require the use of a special tool.
(b)
(b) Portable radiotelephone transceivers that are already certificated may be used to satisfy the survival craft radiotelephone requirement until October 1, 1993, provided the device meets the technical requirements in (a)(1) through (a)(3) of this section.
(c)
(c) Survival craft radiotelephone equipment installed after October 1, 1988, must be certificated to meet the requirements of this section.
(d)
(d) After October 1, 1993, all portable radiotelephone transceivers that are used to satisfy the survival craft radiotelephone requirement must have been certificated to meet the requirements of this section.
(e)
(e) Portable radiotelephone transceivers which are type accepted to meet the requirements of this section must be identified by an appropriate note in the Commission's database.

s 80.273 Technical requirements for radar equipment.

The technical requirements for radar equipment are contained in s 80.825.

s 80.301 Watch requirements.

(a)
~~(a) Each public coast station operating on telegraphy frequencies in the band 405-535 kHz must maintain a watch for classes A1A, A2B and H2B emissions by a licensed radiotelegraph operator on the frequency 500 kHz for three minutes twice each hour, beginning at x h.15 and x h.45 Coordinated Universal Time (UTC).~~
(b)
(b) Each public coast station licensed to operate in the band 1605-3500 kHz must monitor such frequency(s) as are used for working or, at the licensee's discretion, maintain a watch on 2182 kHz.
(c)
(c) Except for distress, urgency or safety messages, coast stations must not transmit on 2182 kHz during the silence periods for three minutes twice each hour beginning at x h.00 and x h.30 Coordinated Universal Time (UTC).
(d)
(d) Each public coast station must provide assistance for distress communications when requested by the Coast Guard.

s 80.302 Notice of discontinuance, reduction, or impairment of service involving a distress watch.

(a)
(a) When changes occur in the operation of a public coast station which include discontinuance, reduction or suspension of a watch required to be maintained on ~~500 kHz~~, 2182 kHz, or 156.800 MHz, notification must be made by the licensee to the nearest district office of the U.S. Coast Guard as soon as practicable. The notification must include the estimated or known resumption time of the watch.

s 80.303 Watch on 156.800 MHz (channel 16).

(a)
(a) During its hours of operation, each coast station operating in the 156-162 MHz band and serving rivers, bays and inland lakes except the Great Lakes, must maintain a safety watch on the frequency 156.800 MHz except when transmitting on 156.800 MHz.
(b)
(b) A coast station is exempt from compliance with the watch requirement when Federal, State, or Local Government stations maintain a watch on 156.800 MHz over 95% of the coast station's service area. Each licensee exempted by rule must notify the nearest district office of the U.S. Coast Guard at least thirty days prior to discontinuing the watch, or in the case of new stations, at least thirty days prior to commencing service. The Coast Guard may require any coast station to maintain the watch temporarily or permanently. The Coast Guard may also require any coast station to remain capable of either immediately resuming the watch or providing the Coast Guard direct dial-up access to the necessary 156.800 MHz transceiver at no charge so that the
Coast Guard can maintain the watch.
(c)
(c) If the government station(s) providing the 156.800 MHz watch over the service area of an exempt station temporarily discontinues that watch, the exempt coast station upon receiving notice of this condition must maintain the watch on 156.800 HMz during the discontinuance. Automated maritime communications systems' compliance with this requirement is limited to the use of existing facilities.

s 80.304 Watch requirement during silence periods.

(a)
~~(a) Each ship station operating on telegraphy frequencies in the band 405-535 kHz, must maintain a watch on the frequency 500 kHz of three minutes twice each hour beginning at x h.15 and x h.45 Coordinated Universal Time (UTC) by a licensed radiotelegraph officer using either a loudspeaker or headphone.~~
(b)
(b) Each ship station operating on telephony on frequencies in the band 1605-3500 kHz must maintain a watch on the frequency 2182 kHz. This watch must be maintained at least twice each hour for 3 minutes commencing at x h.00 and x h.30 Coordinated Universal Time (UTC) using either a loudspeaker or headphone. Expect for distress, urgency or safety messages, ship stations must not transmit during the silence periods on 2182 kHz.

s 80.305 Watch requirements of the Communications Act and the Safety Convention.

(a)

(a) Each ship of the United States which is equipped with a radiotelegraph station for compliance with Part II of Title III of the Communications Act or Chapter IV of the Safety Convention must:

(a) (1)

(1) Keep a continuous and efficient watch on 500 kHz by means of radio officers while being navigated in the open sea outside a harbor or port. In lieu thereof, on a cargo ship equipped with a radiotelegraph auto alarm in proper operating condition, an efficient watch on 500 kHz must be maintained by means of a radio officer for at least 8 hours per day in the aggregate, i.e., for at least one-third of each day or portion of each day that the vessel is navigated in the open sea outside of a harbor or port.

(a) (2)

(2) Keep a continuous and efficient watch on the radiotelephone distress frequency 2182 kHz from the principal radio operating position or the room from which the vessel is normally steered while being navigated in the open sea outside a harbor or port. A radiotelephone distress frequency watch receiver having a loudspeaker and a radiotelephone auto alarm facility must be used to keep the continuous watch on 2182 kHz if such watch is kept from the room from which the vessel is normally steered. After a determination by the master that conditions are such that maintenance of the listening watch would interfere with the safe navigation of the ship, the watch may be maintained by the use of the radiotelephone auto alarm facility alone.

(a) (3)

(3) Keep a continuous and efficient watch on the VHF distress frequency 156.800 MHz from the room from which the vessel is normally steered while in the open sea outside a harbor or port. The watch must be maintained by a designated member of the crew who may perform other duties, relating to the operation or navigation of the vessel, provided such other duties do not interfere with the effectiveness of the watch. Use of a properly adjusted squelch or brief interruptions due to other nearby VHF transmissions are not considered to adversely affect the continuity or efficiency of the required watch on the VHF distress frequency. This watch need not be maintained by vessels subject to the Bridge-to-Bridge Act and participating in a Vessel Traffic Services (VTS) system as required or recommended by the U.S. Coast Guard, when an efficient listening watch is maintained on both the bridge-to- bridge frequency and a separate assigned VTS frequency.

(b)

(b) Each cargo ship of the United States which is equipped with a radiotelephone station for compliance with Part II of Title III of the Communications Act or Chapter IV of the Safety Convention must while being navigated outside of a harbor or port:

(b) (1)

(1) Keep a continuous watch on 2182 kHz in the room from which the vessel is normally steered while at sea, whenever such station is not being used for authorized traffic. Such watch must be maintained by at least one officer or crewmember who may perform other duties relating to the operation or navigation of the vessel, provided such other duties do not interfere with the watch. A radiotelephone watch receiver having a loudspeaker and a radiotelephone auto alarm must be used to keep the continuous watch on 2182 kHz. After a determination by the master that maintenance of the watch would interfere with the safe navigation of the ship, the watch may be maintained by use of the radiotelephone auto alarm facility alone.

(b) (2)

(2) Keep a continuous watch on 156.800 MHz from the room from which the vessel is normally steered. The watch must be maintained by a crewmember who may perform other duties, relating to the operation or navigation of the vessel, provided such other duties do not interfere with the watch. Use of properly adjusted squelch of brief interruptions due to other nearby VHF transmissions are not considered to adversely affect the watch. This watch need not be maintained by vessels subject to the Bridge-to-Bridge Act and participating in a Vessel Traffic Services (VTS) system when a watch is maintained on both the bridge-to-bridge frequency and a VTS frequency.

(c)

(c) Each vessel of the United States transporting more than six passengers for hire, which is equipped with a radiotelephone station for compliance with Part III of Title III of the Communications Act must, while being navigated in the open sea or any tidewater within the jurisdiction of the United States adjacent or contiguous to the open sea, keep a continuous watch on 2182 kHz while the vessel is beyond VHF communication range of the nearest VHF coast station, whenever the radiotelephone station is not being used for authorized traffic. A VHF watch must be kept on 156.800 MHz whenever such station is not being used for authorized traffic. The VHF watch must be maintained at the vessel's steering station actually in use by the qualified operator as defined by s 80.157 or by a crewmember who may perform other duties relating to the operation or navigation of the vessel, provided such other

duties do not interfere with the watch. The use of a properly adjusted squelch is not considered to adversely affect the watch. The VHF watch need not be maintained by vessels subject to the Bridge-to-Bridge Act and participating in a Vessel Traffic Services (VTS) system when an efficient listening watch is maintained on both the bridge-to-bridge frequency and a VTS frequency.

s 80.306 Provisions governing the radiotelegraph watch.

(a)

(a) The radio officer must use the main or reserve receiver, and either headphones or a loudspeaker to keep the watch on 500 kHz.

(b)

(b) During the watch, the radio officer may temporarily interrupt the required watch on 500 kHz while transmitting or receiving signals or messages to or from a station but only if it is not feasible to simultaneously handle such traffic and listen on 500 kHz by a split headphones or a loudspeaker. The watch on 500 kHz must, however, without exception be maintained during the silence periods.

(c)

(c) During this watch, on vessels subject to the Communications Act and the Safety Convention on international voyages, the radio officer may discontinue listening when handling traffic on other frequencies or performing other essential radio duties, but only if it is impracticable to listen by split headphones or loudspeaker. The watch must always be maintained by a radio officer using headphones or loudspeaker during the silence periods. The term "essential radio duties" in this rule includes urgent repairs of radiocommunication equipment used for safety or radio navigational equipment by order of the master.

(d)

(d) When authorized by the master, the radio officer may perform maintenance repair of communications, navigation or other electronic equipment outside of

~~the radiotelegraph room, provided that the listening watch on 500 kHz can be maintained by headphones, loudspeakers, portable receivers, or other suitable means. The watch on 500 kHz must be maintained in the radiotelegraph room during the silence period.~~

~~s 80.307 Compulsory use of radiotelegraph auto alarm.~~

~~The radiotelegraph auto alarm required on a cargo ship subject to the radiotelegraph provisions of Part II of Title III of the Communications Act or the Safety Convention must be in operation, connected to the main antenna and adjusted for optimum efficiency at all times while the ship is being navigated in the open sea when a radio officer is not listening on the frequency 500 kHz, except under the circumstances as set forth in s 80.306(b).~~

s 80.308 Watch required by the Great Lakes Radio Agreement.

(a)

(a) Each ship of the United States that is equipped with a radiotelephone station for compliance with the Great Lakes Radio Agreement must when underway keep a watch on:

(a) (1)

(1) 156.800 MHz on board a vessel 20 meters (65 feet) and over in length, a vessel engaged in towing (See s 80.951(b)), or a vessel carrying more than 6 passengers for hire. This watch must be maintained whenever the station is not being used for authorized traffic. However, a watch on 156.800 MHz need not be maintained by a vessel maintaining a watch on the bridge-to-bridge frequency 156.650 MHz and participating in a Vessel Traffic Services (VTS) system and maintaining a watch on the specified VTS frequency.

(a) (2)

(2) 156.650 MHz on board a vessel 38 meters (124 feet) and over in length, a vessel engaged in towing (See s 80.951(b)), or a vessel carrying more than six passengers for hire. This watch must be maintained continuously and effectively. Sequential monitoring is not sufficient. Portable VHF equipment may be used to meet this requirement. Vessels are exempted from this requirement while transiting the St. Lawrence Seaway and complying with the Joint Regulations of the St. Lawrence Seaway Authority and St. Lawrence Seaway Development Corporation between the lower exit of St. Lambert Lock at Montreal and Crossover Island, New York and in the Welland Canal and approaches between Calling in Point No. 15 and No. 16.

(b)

(b) The watch must be maintained by the master, or person designated by the master, who may perform other duties provided they do not interfere with the effectiveness of the watch.

s 80.309 Watch required by the Bridge-to-Bridge Act.

In addition to the watch requirement contained in s 80.148, all vessels subject to the Bridge-to-Bridge Act must keep a watch on the designated navigational frequency. The watch must be maintained by the master or person in charge of

the vessel or the person designated by the master or person in charge to pilot or direct the movement of the vessel. The person standing watch may perform other duties provided such other duties do not interfere with the watch.

s 80.310 Watch required by voluntary vessels.

Voluntary vessels not equipped with DSC must maintain a watch on 156.800 MHz (channel 16) whenever the radio is operating and is not being used to communicate. Noncommercial vessels, such as recreational boats, may alternatively maintain a watch on 156.450 MHz (channel 9) for call and reply purposes.

s 80.311 Authority for distress transmission.

A mobile station in distress may use any means at its disposal to attract attention, make known its position, and obtain help. A distress call and message, however, must be transmitted only on the authority of the master or person responsible for the mobile station. No person shall knowingly transmit, or cause to be transmitted, any false or fraudulent signal of distress or related communication.

s 80.312 Priority of distress transmissions.

The distress call has absolute priority over all other transmissions. All stations which hear it must immediately cease any transmission capable of interfering with the distress traffic and must continue to listen on the frequency used for the emission of the distress call. This call must not be addressed to a particular station. Acknowledgement of receipt must not be given before the distress message which follows it is sent.

s 80.313 Frequencies for use in distress.

The frequencies specified in the bands below are for use by mobile stations in distress. The conventional emission is shown. When a ship station cannot transmit on the designated frequency or the conventional emission, it may use any available frequency or emission. Frequencies for distress and safety calling using digital selective calling techniques are listed in s 80.359(b). Distress and safety NB-DP frequencies are indicated by footnote [FN2] in s 80.361(b).

Frequency band	Emission	Carrier frequency
~~405-535 kHz~~	~~A2B~~	~~500 kHz.~~
1605-3500 kHz	J3E	2182 kHz.
~~4000-27, 5000 kHz~~	~~A2B~~	~~8364 kHz~~.
118-136 MHz	A3E	121.500 MHz.
156-162 MHz	F3E, PON	156.800 MHz 156.750 MHz.

243 MHz ..... A3N ..... 243.000 MHz.

The maximum transmitter power obtainable may be used.

s 80.314 Distress signals.

(a)
(a) The international radiotelegraphy distress signal consists of the group "three dots, three dashes, three dots" (... ---...), symbolized herein by SOS, transmitted as a single signal in which the dashes are slightly prolonged so as to be distinguished clearly from the dots.
(b)
(b) The international radiotelephone distress signal consists of the word MAYDAY, pronounced as the French expression "m'aider".
(c)
(c) These distress signals indicate that a mobile station is threatened by grave and imminent danger and requests immediate assistance.

s 80.315 Distress calls.

(a)
(a) The radiotelegraph distress call consists of:
(a) (1)
(1) The distress signal SOS, sent three times;
(a) (2)
(2) The word DE;
(a) (3)
(3) The call sign of the mobile station in distress, sent three times.
(b)
(b) The radiotelephone distress call consists of:
(b) (1)
(1) The distress signal MAYDAY spoken three times;
(b) (2)
(2) The words THIS IS;
(b) (3)
(3) The call sign (or name, if no call sign assigned) of the mobile station in distress, spoken three times.

s 80.316 Distress messages.

(a)
(a) The radiotelegraph distress message consists of:
(a) (1)
(1) The distress signal SOS;
(a) (2)
(2) The name of the mobile station in distress;
(a) (3)
(3) Particulars of its position;
(a) (4)
(4) The nature of the distress;
(a) (5)
(5) The kind of assistance desired;

(a) (6)
(6) ~~Any other information which might facilitate rescue.~~
(b)
(b) The radiotelephone distress message consists of:
(b) (1)
(1) The distress signal MAYDAY;
(b) (2)
(2) The name of the mobile station in distress;
(b) (3)
(3) Particulars of its position;
(b) (4)
(4) The nature of the distress;
(b) (5)
(5) The kind of assistance desired;
(b) (6)
(6) Any other information which might facilitate rescue, for example, the length, color, and type of vessel, number of persons on board.
(c)
(c) As a general rule, a ship must signal its position in latitude and longitude, using figures for the degrees and minutes, together with one of the words NORTH or SOUTH and one of the words EAST or WEST. ~~In radiotelegraphy, the signal . . . must be used to separate the degrees from the minutes~~. When practicable, the true bearing and distance in nautical miles from a known geographical position may be given.

s 80.317 ~~Radiotelegraph and~~ radiotelephone alarm signals.

(a)
~~(a) The international radiotelegraph alarm signal consists of a series of twelve dashes sent in one minute, the duration of each dash being four seconds and the duration of the interval between consecutive dashes one second. The purpose of this special signal is the actuation of automatic devices giving the alarm to attract the attention of the operator when there is no listening watch on the distress frequency~~.
(b)
(b) The international radiotelephone alarm signal consists of two substantially sinusoidal audio frequency tones transmitted alternately. One tone must have a frequency of 2200 Hertz and the other a frequency of 1300 Hertz, the duration of each tone being 250 milliseconds. When generated by automatic means, the radiotelephone alarm signal must be transmitted continuously for a period of at least 30 seconds, but not exceeding one minute; when generated by other means, the signal must be transmitted as continuously as practicable over a period of approximately one minute. The purpose of this special signal is to attract the attention of the person on watch or to actuate automatic devices giving the alarm.

s 80.318 Use of alarm signals.

(a)
(a) The ~~radiotelegraph or~~ radiotelephone alarm signal, as appropriate, must only be used to announce:
(a) (1)
(1) That a distress call or message is about to follow;
(a) (2)

(2) The transmission of an urgent cyclone warning. In this case the alarm signal may only be used by coast stations authorized by the Commission to do so; or

(a) (3)

(3) The loss of a person or persons overboard. In this case the alarm signal may only be used when the assistance of other ships is required and cannot be satisfactorily obtained by the use of the urgency signal only, but the alarm signal must not be repeated by other stations. The message must be preceded by the urgency signal.

(b)

~~(b) In cases described in paragraphs (a)(2) and (3) of this section, the transmission of the warning or message by radiotelegraphy must not begin until two minutes after the end of the radiotelegraph alarm signal~~.

s 80.319 Radiotelegraph distress call and message transmission procedure.

(a)

(a) The radiotelegraph distress procedure consists of the following six steps: however, when time is vital, the first and second steps may be omitted. These two steps of the distress procedure may also be omitted in circumstances when transmission of the alarm signal is considered unnecessary:

(a) (1)

(1) The radiotelegraph alarm signal;

(a) (2)

(2) The distress call and an interval of two minutes;

(a) (3)

(3) The distress call;

(a) (4)

(4) The distress message;

(a) (5)

(5) Two dashes of ten to fifteen seconds each;

(a) (6)

(6) The call sign of the mobile station in distress.

(b)

(b) The radiotelegraph distress transmissions must be sent by means of the international Morse code at a speed not exceeding 16 words per minute nor less than 8 words per minute.

(c)

(c) The distress message, preceded by the distress call, must be repeated at intervals, especially during the 500 kHz international silence periods, until an answer is received. The radiotelegraph alarm signal may also be repeated, if necessary.

(d)

(d) The transmissions under paragraphs (a)(5) and (6) of this section, which are to permit direction finding stations to determine the position of the station in distress, may be repeated at frequent intervals if necessary.

(e)

(e) When the mobile station in distress receives no answer to a distress message transmitted on the distress frequency, the message may be repeated on any other available frequency on which attention might be attracted.

s 80.320 Radiotelephone distress call and message transmission procedure.

(a)

(a) The radiotelephone distress procedure consists of:

(a) (1)
(1) The radiotelephone alarm signal (whenever possible);
(a) (2)
(2) The distress call;
(a) (3)
(3) The distress message.
(b)
(b) Radiotelephone distress transmissions must be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.
(c)
(c) After the transmission by radiotelephony of its distress message, the mobile station may be requested to transmit suitable signals followed by its call sign or name, to permit direction-finding stations to determine its position. This request may be repeated at frequent intervals if necessary.
(d)
(d) The distress message, preceded by the distress call, must be repeated at intervals until an answer is received. This repetition must be preceded by the radiotelephone alarm signal whenever possible.
(e)
(e) When the mobile station in distress receives no answer to a distress message transmitted on the distress frequency, the message may be repeated on any other available frequency on which attention might be attracted.

s 80.321 Acknowledgement of receipt of distress message.

(a)
(a) Stations of the maritime mobile service which receive a distress message from a mobile station which is beyond any possible doubt in their vicinity must immediately acknowledge receipt. However, in areas where reliable communication with one or more coast stations is practicable, ship stations may defer this acknowledgement for a short interval so that a coast station may acknowledge receipt.
(b)
(b) Stations of the maritime mobile service which receive a distress message from a mobile station which beyond any possible doubt is not in their vicinity, must allow a short interval of time to elapse before acknowledging receipt of the message in order to permit stations nearer to the mobile station in distress to acknowledge receipt without interference.

s 80.322 Form of acknowledgement.

(a)
~~(a) The acknowledgement of receipt of a radiotelegraph distress message is transmitted in the following form~~:
(a) (1)
~~(1) The distress signal SOS;~~
(a) (2)
~~(2) The call sign of the station sending the distress message, sent three times;~~
(a) (3)
(3) ~~The word DE~~;
(a) (4)
(4) ~~The call sign of the station acknowledging receipt, sent three times;~~
(a) (5)
(5) ~~The group RRR;~~
(a) (6)

(6) ~~The message signal SOS~~.

(b)

(b) The acknowledgement of receipt of a radiotelephone distress message is transmitted in the following form:

(b) (1)

(1) The distress signal MAYDAY;

(b) (2)

(2) The call sign or other identification of the station sending the distress message, spoken three times;

(b) (3)

(3) The words THIS IS;

(b) (4)

(4) The call sign or other identification of the station acknowledging receipt, spoken three times;

(b) (5)

(5) The word RECEIVED;

(b) (6)

(6) The distress signal MAYDAY.

s 80.323 Information furnished by an acknowledging station.

(a)

(a) Every mobile station which acknowledges receipt of a distress message must on the order of the master or person responsible for the ship, aircraft, or other vehicle carrying such mobile station, transmit as soon as possible the following information in the order shown:

(a) (1)

(1) Its identifier;

(a) (2)

(2) Its position;

(a) (3)

(3) The speed at which it is proceeding towards, and the approximate time it will take to reach the mobile station in distress.

(b)

(b) Before sending this message, the station must ensure that it will not interfere with the emissions of other stations better situated to render immediate assistance to the station in distress.

s 80.324 Transmission of distress message by station not itself in distress.

(a)

(a) A mobile station or a land station which learns that a mobile station is in distress must transmit a distress message in any of the following cases:

(a) (1)

(1) When the station in distress cannot transmit the distress message.

(a) (2)

(2) When the master or person responsible for the ship, aircraft, or other vehicle not in distress, or for the land station, believes that further help is necessary.

(a) (3)

(3) When, although not in a position to assist, it has heard a distress message which has not been acknowledged. When a mobile station transmits such a distress message, it must notify the authorities who may be able to assist.

(b)

(b) Transmission must be made on the international distress frequencies or on any other available frequency on which attention might be attracted.

(c)

(c) Transmission of the distress message must always be preceded by the call indicated below, which must itself be preceded whenever possible by the ~~radiotelegraph or~~ radiotelephone alarm signal. This call consists of:

(c) (1)

(1) ~~When radiotelegraphy is used~~:

(c) (1) (i)

(i) ~~The signal DDD SOS SOS SOS DDD.~~

(c) (1) (ii)

(ii) ~~The word DE~~;

(c) (1) (iii)

(iii) ~~The call sign of the transmitting station, sent three times~~.

(c) (2)

(2) When radiotelephony is used:

(c) (2) (i)

(i) The signal MAYDAY RELAY, spoken three times;

(c) (2) (ii)

(ii) The words THIS IS;

(c) (2) (iii)

(iii) The call sign or other identification of the transmitting station, spoken three times.

(d)

(d) ~~When the radiotelegraph alarm signal is used, an interval of two minutes must be allowed, whenever this is considered necessary, before the transmission of the call mentioned in paragraph (c)(1) of this section.~~

s 80.325 Control of distress traffic.

(a)

(a) Distress traffic consists of all messages relating to the immediate assistance required by the mobile station in distress. In distress traffic, the distress signal must be sent before the call and at the beginning of the preamble of any radiotelegram.

(b)

(b) The control of distress traffic is the responsibility of the mobile station in distress or of the station which has sent the distress message. These stations may delegate the control of the distress traffic to another station.

(c)

(c) The station in distress or the station in control of distress traffic may impose silence either on all stations of the mobile service in the area or on any station which interferes with the distress traffic. It must address these instructions "to all stations" or to one station only, according to circumstances. In either case, it must use one of the following signals which are reserved for use by the mobile station in distress and for the station controlling distress traffic:

(c) (1)

~~(1) In radiotelegraphy, the abbreviation QRT, followed by the distress signal SOS.~~

(c) (2)

(2) In radiotelephony, the signal SEELONCE MAYDAY.

(d)

(d) If essential, any station of the mobile service near the ship, aircraft, or other vehicle in distress may also impose silence. It must use for this purpose:
(d) (1)
(1) ~~In radiotelegraphy, the abbreviation QRT, followed by the word DISTRESS and its own call sign;~~
(d) (2)
(2) In radiotelephony, the word SEELONCE, followed by the word DISTRESS and its own call sign or other identification.

s 80.326 Notification of resumption of normal working.

(a)
(a) When distress traffic has ceased, or when complete silence is no longer necessary on a frequency which has been used for distress traffic, the station which has controlled this traffic must transmit on that frequency a message addressed "to all stations" indicating that normal working may be resumed.
(a) (1)
(1) ~~In radiotelegraphy, this message consists of~~:
(a) (1) (i)
(i) ~~The distress signal SOS;~~
(a) (1) (ii)
(ii) ~~The call "to all stations" (CQ), sent three times~~;
(a) (1) (iii)
(iii) ~~The word DE~~;
(a) (1) (iv)
(iv) ~~The call sign of the station sending the message~~;
(a) (1) (v)
(v) ~~The time of handing in the message~~;
(a) (1) (vi)
(vi) ~~The name and call sign of the mobile station which was in distress~~;
(a) (1) (vii)
(vii) ~~The service abbreviation QUM.~~
(a) (2)
(2) In radiotelephony, this message consists of:
(a) (2) (i)
(i) The distress signal MAYDAY;
(a) (2) (ii)
(ii) The call "Hello all stations", spoken three times;
(a) (2) (iii)
(iii) The words THIS IS;
(a) (2) (iv)
(iv) The call sign or other identification of the station sending the message;
(a) (2) (v)
(v) The time of handing in of the message;
(a) (2) (vi)
(vi) The name and call sign of the mobile station which was in distress;
(a) (2) (vii)
(vii) The words SEELONCE FEENEE OR PRU-DONCE.
(b)
(b) Until they receive the foregoing message indicating that normal or limited working may be resumed, all stations which are aware of the distress traffic, and which are not taking part in it, are forbidden to transmit on the frequencies on which the distress traffic is taking place.

s 80.327 Urgency signals

(a)

(a) The urgency signal indicates that the calling station has a very urgent message to transmit concerning the safety of a ship, aircraft, or other vehicle, or the safety of a person. The urgency signal must be sent only on the authority of the master or person responsible for the mobile station.

(b)

(b) ~~In radiotelegraphy, the urgency signal consists of three repetitions of the group XXX, sent with the individual letters of each group, and the successive groups clearly separated from each other. It must be transmitted before the call.~~

(c)

(c) In radiotelephony, the urgency signal consists of three oral repetitions of the group of words PAN PAN transmitted before the call.

(d)

(d) The urgency signal has priority over all other communications except distress. All mobile and land stations which hear it must not interfere with the transmission of the message which follows the urgency signal.

s 80.328 Urgency message.

(a)

(a) The urgency signal and call, and the message following it, must be sent on one of the international distress frequencies. Stations which cannot transmit on a distress frequency may use any other available frequency on which attention might be attracted.

(b)

(b) Mobile stations which hear the urgency signal must continue to listen for at least three minutes. At the end of this period, if no urgency message has been heard, they may resume their normal service. However, land and mobile stations which are in communication on frequencies other than those used for the transmission of the urgency signal and of the call which follows it may continue their normal work without interruption provided the urgency message is not addressed "to all stations".

(c)

(c) When the urgency signal has been sent before transmitting a message "to all stations" which calls for action by the stations receiving the message, the station responsible for its transmission must cancel it as soon as it knows that action is no longer necessary. This message of cancellation must likewise be addressed "to all stations".

s 80.329 Safety signals.

(a)

(a) The safety signal indicates that the station is about to transmit a message concerning the safety of navigation or giving important meteorological warnings.

(b)

(b) ~~In radiotelegraphy, the safety signal consists of three repetitions of the group TTT, sent with the individual letters of each group, and the successive groups clearly separated from each other. It must be sent before the call.~~

(c)

(c) In radiotelephony, the safety signal consists of the word SECURITE, pronounced as in French, spoken three times and transmitted before the call.

(d)

(d) The safety signal and call must be sent on one of the international distress frequencies (~~500 kHz or 8364 kHz radiotelegraph~~; 2182 kHz or 156.8 MHz radiotelephone). Stations which cannot transmit on a distress frequency may use any other available frequency on which attention might be attracted.

s 80.330 Safety message.

(a)

(a) The safety signal and call must be followed by the safety message. Where practicable, the safety message should be sent on a working frequency, and a suitable announcement to this effect must be made at the end of the call.

(b)

(b) ~~Except for the cases mentioned in paragraph (c) of this section, the safety signal when sent on the frequency 500 kHz must be transmitted toward the end of the first available silence period; the safety message must be transmitted immediately after the silence period.~~

(c)

(c) Messages about meteorological warnings, of cyclones, dangerous ice, dangerous wrecks, or any other imminent danger to marine navigation must be preceded by the safety signal.

(d)

(d) Stations hearing the safety signal must not make any transmission likely to interfere with the message.

s 80.331 Bridge-to-bridge communication procedure.

(a)

(a) Vessels subject to the Bridge-to-Bridge Act transmitting on the designated navigational frequency must conduct communications in a format similar to those given below:

(a) (1)

(1) this is the (name of vessel). My position is (give readily identifiable position, course and speed) about to (describe contemplated action). Out.

(a) (2)

(2) Vessel off (give a readily identifiable position). This is (name of vessel) off (give a readily identifiable position). I plan to (give proposed course of action). Over.

(a) (3)

(3) (Coast station), this is (vessel's name) off (give readily identifiable position). I plan to (give proposed course of action). Over.

(b)

(b) Vessels acknowledging receipt must answer "(Name of vessel calling). This is (Name of vessel answering). Received your call," and follow with an indication of their intentions. Communications must terminate when each ship is satisfied that the other no longer poses a threat to its safety and is ended with "Out".

(c)

(c) Use of power greater than 1 watt in a bridge-to-bridge station shall be limited to the following three situations:

(c) (1)

(1) Emergency.

(c) (2)

(2) Failure of the vessel being called to respond to a second call at low power.

(c) (3)

(3) A broadcast call as in paragraph (a)(1) of this section in a blind situation, e.g., rounding a bend in a river.

s 80.332 Equipment to aid search and rescue operations.

(a)

(a) Survival craft stations may transmit distress, urgency and safety signals, calls and messages.

(b)

(b) EPIRB's may transmit only in accordance with the requirements of Subparts V and X of this part.

s 80.333 Stations in the maritime mobile-satellite service.

The provisions of ss 80.311 and 80.324 apply to the operations of ship earth stations in the maritime mobile-satellite service.

s 80.351 Scope.

The following sections describe the carrier frequencies and general uses of radiotelegraphy with respect to the following:

--Distress, urgency, safety, call and reply.

--Working.

--Digital selective calling (DSC).

--Narrow-band direct-printing (NB-DP).

--Facsimile.

s ~~80.353 General uses--radiotelegraphy~~.

(a)

(a) ~~Unless otherwise indicated radiotelegraphy may be used by ship and public coast stations only.~~

(b)

(b) ~~The signal code for Morse telegraphy must be the international Morse code signals specified in the Telegraph Regulations annexed to the International Telecommunication Convention~~.

(c)

~~(c) To facilitate communications, ship stations transmitting by means of radiotelegraphy must use the service abbreviations ("Q" signals) listed in Appendix 14 to the ITU Radio Regulations whenever practicable~~.

(d)

(d) In order to reduce interference stations must attempt to select calling frequencies which provide the most favorable propagational characteristics for effecting reliable communications.

(e)

(e) Coast stations may apply to use for telegraphy communications any additional coast station frequencies that are allocated for such communications in the 10-27500 kHz band that are not listed in this part. See the Table of Frequency allocations in s 2.106 of this chapter. The use of such frequencies will be authorized initially with a six month provisional period.

(f)

(f) Radiotelegraphy stations communicating with a Government station may transmit on a Government frequency when authorized to do so by the Government station or agency if the emission, bandwidth and frequency tolerance of the non-Government station are within the same limits as the Government station.

s 80.355 Distress, urgency, safety, call and reply Morse code frequencies.

This section describes the distress, urgency, safety, call and reply carrier frequencies assignable to stations for Morse code radiotelegraphy.

(a)

(a) Frequencies in the 100-160 kHz band. The international calling frequency in the 100-160 kHz band is 143 kHz using A1A or J2A emission. When a ship station operating in the 100-160 kHz band desires to communicate with a coast station, it must call on the frequency 143 kHz unless the International List of Coast Stations provides otherwise. Coast stations must reply on their normal working frequency in this band. Only individual calls, replies to such calls, and transmission of signals preparatory to traffic may be transmitted on 143 kHz.

(b)

(b) Frequencies in the 405-535 kHz band.

(b) (1)

(1) The international distress, urgency, safety, call and reply frequency used by ship and coast stations operating in the 405-525 kHz band is 500 kHz. A2A and A2B or H2A and H2B emissions are preferred for distress calls, distress traffic and for urgency and safety messages. For call and reply messages A1A or J2A emission must be used. In order to facilitate distress communications routine correspondence transmissions on 500 kHz must be reduced to a minimum.

(b) (2)

(2) In Region 2 and areas of heavy traffic ship stations must request coast stations to listen on the ship station's working frequencies.

(b) (3)

(3) In areas where 500 kHz is used for distress a ship or coast station must use the supplementary calling frequency 512 kHz for routine calling and normally request a reply on its working frequency. The called station may reply on 512 kHz when requested to do so by the calling station.

(c)

(c) Frequencies in the 2000-27500 kHz band.--

(c) (1)

(1) Survival craft frequencies: Survival craft operating on 8364 kHz must use A2A or H2A emission to establish communications related to search and rescue operations.

(c) (2)

(2) Ship station frequencies. The following table describes the calling frequencies in the 4000-27500 kHz band which are available for use by authorized

ship stations equipped with crystal controlled oscillators for A1A or J2A radiotelegraphy. There are two series of frequencies for worldwide use and two series of frequencies for each geographic region. Ship stations with synthesized transmitters may operate on every full 100 Hz increment in the 0.5 kHz channel for the frequencies listed, except for 100 Hz above and below those designated for worldwide use. During normal business hours when not communicating on other frequencies, all U.S. coast radiotelegraph stations must monitor the worldwide frequencies and the initial calling frequencies for the region in which it is located. The specific frequencies which must be monitored by a coast station will vary with propagation conditions. The calling frequencies which are routinely monitored by specific coast stations can be determined by reference to the ITU publication entitled "List of Coast Stations". Initial calls by ship stations must be made on the appropriate initial calling frequency first. Calls on the worldwide frequencies may be made only after calls on the appropriate initial calling frequency are unsuccessful.

	Ship Morse Calling Frequencies (kHz)									
Region:	ITU								ITU	
Worldwide	3	4184.0	6276.0	8368.0	1255 2.0	16736.0	22280.5	C	25172.0
	4	4184.5	6276.5	8369.0	12553.5	1 6738.0	22281.0	C	25172.0
Atlantic:									
Initial	1	4182.0	6277.0	8366.0	1255 0.0	16734.0	22279.5	A	25171.5
Alternate	2	4182.5	6277.5	8366.5	12 550.5	16734.5	22280.0	A	25171.5
Caribbean:									
Initial	1	4182.0	6277.0	8366.0	1255 0.0	16734.0	22279.5	A	25171.5
Alternate	2	4182.5	6277.5	8366.5	12 550.5	16734.5	22280.0	A	25171.5
Gulf-Mexico:									
Initial	5	4183.0	6278.0	8367.0	1255 1.0	16735.0	22281.5	A	25171.5
Alternate	6	4183.5	6278.5	8367.5	12 551.5	16735.5	22282.0	A	25171.5
N Pacific:									
Initial	7	4185.0	6279.0	8368.5	1255 2.5	16736.5	22282.5	B	25172.5
Alternate	8	4185.5	6279.5	8369.5	12 553.0	16737.0	22283.0	B	25172.5
S Pacific:									
Initial	9	4186.0	6280.0	8370.0	1255 4.0	16737.5	22283.5	B	25172.5
Alternate ...	10	4186.5	6280.5	8370.5	1 2554.5	16738.5	22284.0	B	25172.5

(c) (3)

(3) Coast Station frequencies. Coast stations may use any working carrier frequency for distress, safety and calling listed in s 80.357(b)(1) which is not identified with a specific use.

(d)

(d) Frequencies in the VHF bands.

(d) (1)

(1) Survival craft stations using 121.500 MHz may be assigned A3N emission for radiobeacon purposes.

(d) (2)

(2) EPIRB stations may be assigned 121.500 MHz and 243.000 MHz using A3E, A3X and NON emission or 156.750 MHz and 156.800 MHz using G3N emission to aid search and rescue operations. See subpart V of this part.

CREDIT

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s 80.357 Morse code working frequencies.

This section describes the working frequencies assignable to maritime stations for A1A or J2A radiotelegraphy.

(a)

(a) Ship station frequencies--

(a) (1)

(1) Frequencies in the 100-160 kHz band. The following table describes the working carrier frequencies in the 100-160 kHz band which are assignable to ship stations. A ship station may also transmit on a radiotelegraphy working channel of a coast station within the 100-160 kHz band when directed to do so by the coast station provided interference is not caused to any land, fixed, broadcast, or radiolocation station.

100-160 (kHz)
152
153
154
155
156
157
158

(a) (2)

(2) Frequencies in the 405-525 kHz band. The following table describes the working carrier frequencies in the 405-525 kHz band which are assignable to ship stations. A ship station may transmit on a radiotelegraphy working channel of a coast station in the 415-490 kHz band when directed to do so by the coast station.

405-525 (kHz)
[FN1]410
425
454
468
480
[FN2]512
[FN3]518

FN1 The frequency 410 kHz may be used on a secondary basis for the transmission of radiodetermination information and for transmitting by radiotelegraph radiodetermination related messages to direction-finding stations.

FN2 The frequency 512 kHz may be used as a supplementary calling frequency when 500 kHz is used for distress, safety and urgency communications. The use of the 512 kHz as a working frequency is prohibited in areas where it is used as a supplementary calling frequency when 500 kHz is used for distress, safety,

and urgency communications.

FN3 The frequency 518 kHz is a receive only frequency by ship stations. It is used by U.S. Coast Guard coast stations for NB-DP transmissions of meteorological and navigational warnings to ships.

(a) (3)

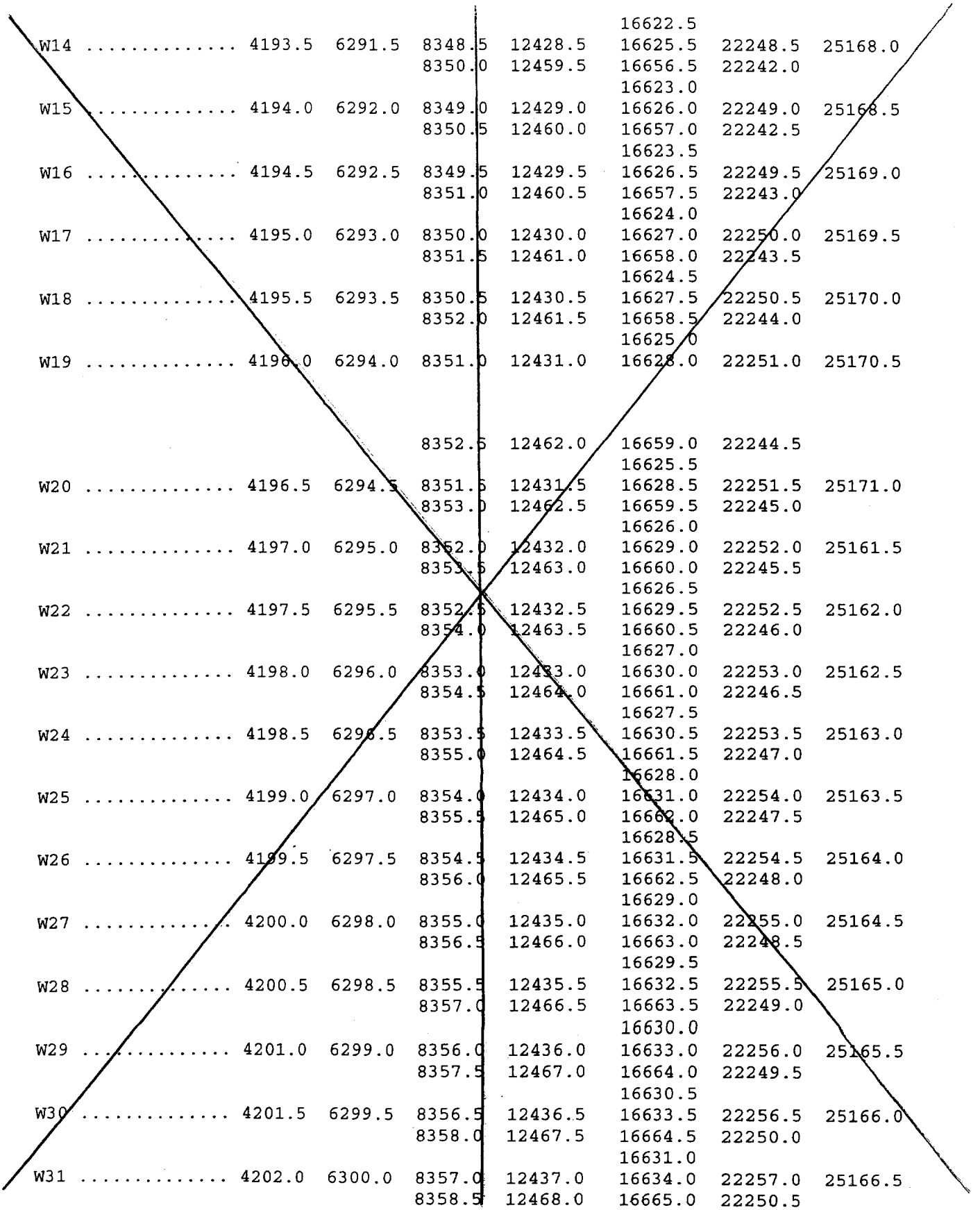
(3) Frequencies in the 2000-27500 kHz band. This paragraph describes the working frequencies and Channel Series in the 2000-27500 kHz band which are assignable to ship stations.

(a) (3) (i)

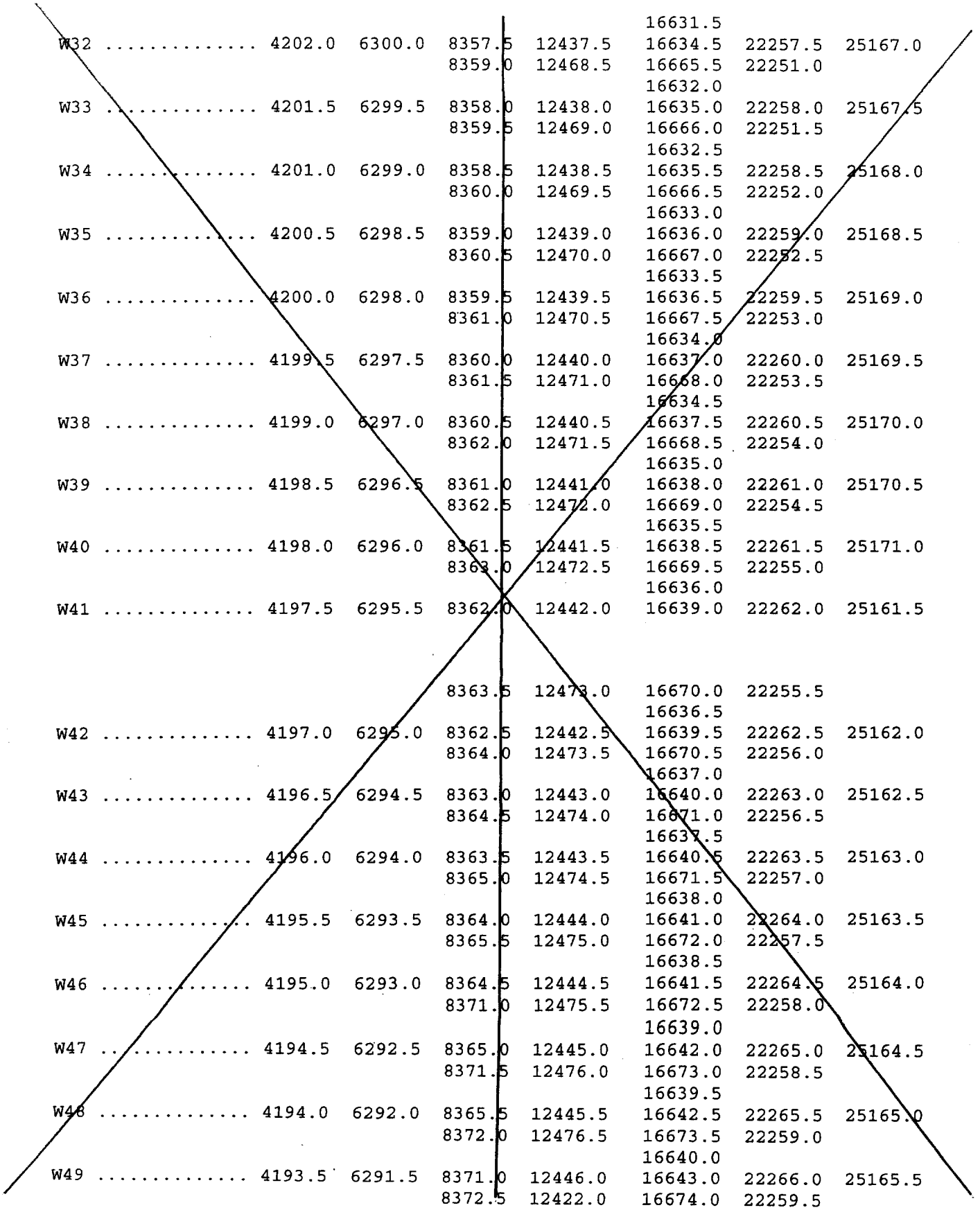
(i) Two Channel Series will be assigned for routine use to each ship station. Frequencies from any other Channel Series may be used if the frequencies in the assigned Channel Series are not adequate for communications.

Ship Morse Working Frequencies (kHz)

Channel Series:							
W1	4187.0	6285.0	8342.0	12422.0	16619.0	22242.0	25161.5
			8343.5	12453.0	16650.0	22273.0	
					16681.0		
W2	4187.5	6285.5	8342.5	12422.5	16619.5	22242.5	25162.0
			8344.0	12453.5	16650.5	22273.5	
					16681.5		
W3	4188.0	6286.0	8343.0	12423.0	16620.0	22243.0	25162.5
			8344.5	12454.0	16651.0	22274.0	
					16682.0		
W4	4188.5	6286.5	8343.5	12423.5	16620.5	22243.5	25163.0
			8345.0	12454.5	16651.5	22274.5	
					16682.5		
W5	4189.0	6287.0	8344.0	12424.0	16621.0	22244.0	25163.5
			8345.5	12455.0	16652.0	22275.0	
					16683.0		
W6	4189.5	6287.5	8344.5	12424.5	16621.5	22244.5	25164.0
			8346.0	12455.5	16652.5	22275.5	
					16619.0		
W7	4190.0	6288.0	8345.0	12425.0	16622.0	22245.0	25164.5
			8346.5	12456.0	16653.0	22276.0	
					16619.5		
W8	4190.5	6288.5	8345.5	12425.5	16622.5	22245.5	25165.0
			8347.0	12456.5	16653.5	22276.5	
					16620.0		
W9	4191.0	6289.0	8346.0	12426.0	16623.0	22246.0	25165.5
			8347.5	12457.0	16654.0	22277.0	
					16620.5		
W10	4191.5	6289.5	8346.5	12426.5	16623.5	22246.5	25166.0
			8348.0	12457.5	16654.5	22270.5	
					16621.0		
W11	4192.0	6290.0	8347.0	12427.0	16624.0	22247.0	25166.5
			8348.5	12458.0	16655.0	22278.0	
					16621.5		
W12	4192.5	6290.5	8347.5	12427.5	16624.5	22247.5	25167.0
			8349.0	12458.5	16655.5	22278.5	
					16622.0		
W13	4193.0	6291.0	8348.0	12428.0	16625.0	22248.0	25167.5
			8349.5	12459.0	16656.0	22279.0	



					16622.5		
W14	4193.5	6291.5	8348.5	12428.5	16625.5	22248.5	25168.0
			8350.0	12459.5	16656.5	22242.0	
					16623.0		
W15	4194.0	6292.0	8349.0	12429.0	16626.0	22249.0	25168.5
			8350.5	12460.0	16657.0	22242.5	
					16623.5		
W16	4194.5	6292.5	8349.5	12429.5	16626.5	22249.5	25169.0
			8351.0	12460.5	16657.5	22243.0	
					16624.0		
W17	4195.0	6293.0	8350.0	12430.0	16627.0	22250.0	25169.5
			8351.5	12461.0	16658.0	22243.5	
					16624.5		
W18	4195.5	6293.5	8350.5	12430.5	16627.5	22250.5	25170.0
			8352.0	12461.5	16658.5	22244.0	
					16625.0		
W19	4196.0	6294.0	8351.0	12431.0	16628.0	22251.0	25170.5
			8352.5	12462.0	16659.0	22244.5	
					16625.5		
W20	4196.5	6294.5	8351.5	12431.5	16628.5	22251.5	25171.0
			8353.0	12462.5	16659.5	22245.0	
					16626.0		
W21	4197.0	6295.0	8352.0	12432.0	16629.0	22252.0	25161.5
			8353.5	12463.0	16660.0	22245.5	
					16626.5		
W22	4197.5	6295.5	8352.5	12432.5	16629.5	22252.5	25162.0
			8354.0	12463.5	16660.5	22246.0	
					16627.0		
W23	4198.0	6296.0	8353.0	12433.0	16630.0	22253.0	25162.5
			8354.5	12464.0	16661.0	22246.5	
					16627.5		
W24	4198.5	6296.5	8353.5	12433.5	16630.5	22253.5	25163.0
			8355.0	12464.5	16661.5	22247.0	
					16628.0		
W25	4199.0	6297.0	8354.0	12434.0	16631.0	22254.0	25163.5
			8355.5	12465.0	16662.0	22247.5	
					16628.5		
W26	4199.5	6297.5	8354.5	12434.5	16631.5	22254.5	25164.0
			8356.0	12465.5	16662.5	22248.0	
					16629.0		
W27	4200.0	6298.0	8355.0	12435.0	16632.0	22255.0	25164.5
			8356.5	12466.0	16663.0	22248.5	
					16629.5		
W28	4200.5	6298.5	8355.5	12435.5	16632.5	22255.5	25165.0
			8357.0	12466.5	16663.5	22249.0	
					16630.0		
W29	4201.0	6299.0	8356.0	12436.0	16633.0	22256.0	25165.5
			8357.5	12467.0	16664.0	22249.5	
					16630.5		
W30	4201.5	6299.5	8356.5	12436.5	16633.5	22256.5	25166.0
			8358.0	12467.5	16664.5	22250.0	
					16631.0		
W31	4202.0	6300.0	8357.0	12437.0	16634.0	22257.0	25166.5
			8358.5	12468.0	16665.0	22250.5	



					16631.5		
W32	4202.0	6300.0	8357.5	12437.5	16634.5	22257.5	25167.0
			8359.0	12468.5	16665.5	22251.0	
					16632.0		
W33	4201.5	6299.5	8358.0	12438.0	16635.0	22258.0	25167.5
			8359.5	12469.0	16666.0	22251.5	
					16632.5		
W34	4201.0	6299.0	8358.5	12438.5	16635.5	22258.5	25168.0
			8360.0	12469.5	16666.5	22252.0	
					16633.0		
W35	4200.5	6298.5	8359.0	12439.0	16636.0	22259.0	25168.5
			8360.5	12470.0	16667.0	22252.5	
					16633.5		
W36	4200.0	6298.0	8359.5	12439.5	16636.5	22259.5	25169.0
			8361.0	12470.5	16667.5	22253.0	
					16634.0		
W37	4199.5	6297.5	8360.0	12440.0	16637.0	22260.0	25169.5
			8361.5	12471.0	16668.0	22253.5	
					16634.5		
W38	4199.0	6297.0	8360.5	12440.5	16637.5	22260.5	25170.0
			8362.0	12471.5	16668.5	22254.0	
					16635.0		
W39	4198.5	6296.5	8361.0	12441.0	16638.0	22261.0	25170.5
			8362.5	12472.0	16669.0	22254.5	
					16635.5		
W40	4198.0	6296.0	8361.5	12441.5	16638.5	22261.5	25171.0
			8363.0	12472.5	16669.5	22255.0	
					16636.0		
W41	4197.5	6295.5	8362.0	12442.0	16639.0	22262.0	25161.5
			8363.5	12473.0	16670.0	22255.5	
					16636.5		
W42	4197.0	6295.0	8362.5	12442.5	16639.5	22262.5	25162.0
			8364.0	12473.5	16670.5	22256.0	
					16637.0		
W43	4196.5	6294.5	8363.0	12443.0	16640.0	22263.0	25162.5
			8364.5	12474.0	16671.0	22256.5	
					16637.5		
W44	4196.0	6294.0	8363.5	12443.5	16640.5	22263.5	25163.0
			8365.0	12474.5	16671.5	22257.0	
					16638.0		
W45	4195.5	6293.5	8364.0	12444.0	16641.0	22264.0	25163.5
			8365.5	12475.0	16672.0	22257.5	
					16638.5		
W46	4195.0	6293.0	8364.5	12444.5	16641.5	22264.5	25164.0
			8371.0	12475.5	16672.5	22258.0	
					16639.0		
W47	4194.5	6292.5	8365.0	12445.0	16642.0	22265.0	25164.5
			8371.5	12476.0	16673.0	22258.5	
					16639.5		
W48	4194.0	6292.0	8365.5	12445.5	16642.5	22265.5	25165.0
			8372.0	12476.5	16673.5	22259.0	
					16640.0		
W49	4193.5	6291.5	8371.0	12446.0	16643.0	22266.0	25165.5
			8372.5	12422.0	16674.0	22259.5	